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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/982,886 | 10/22/2001 | Seiji Hashimoto | 35.C15892 | 7524 |
| 5514 | 7590 | 11/03/2004 | EXAMINER | |
| FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112 | | | ELDER, JEREMY RYAN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2612 | |

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/982,886

Applicant(s)

HASHIMOTO, SEIJI

Examiner

Jeremy R. Elder

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 11 and 12 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

66 in figure 9A.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure

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is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Title

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wadsworth et al. (US #5,449,908).

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6. Regarding claim 1, Wadsworth et al. disclose image pickup element formed on two substrates (10 and 12 in fig. 1) (col. 3, lines 49-58), but the substrates are on a single semiconductor chip (10 and 12 in fig 2a) (col. 4, lines 25-30).

Wadsworth et al. disclose photoelectric conversion units (CCD 14). The CCD units are shown as a plurality of vertical columns (fig. 1) meaning the photoelectric conversion units are arranged two-dimensionally.

Since Wadsworth et al. disclose a plurality of CCDs (columns 14 in fig. 1) adapted to transfer charges generated by said photoelectric conversion units arranged two-dimensionally, official notice is taken that the column of CCDs are connected to a vertical line of photoelectric conversion units.

Wadsworth et al. disclose a plurality of charge detection circuits (fig. 7) adapted to detect the charges from said plurality of CCDs and supplying corresponding signal levels, each of said plurality of charge detection circuits being arranged correspondingly to each CCD (fig. 1 and co. 3, lines 49-62).

Wadsworth et al. also disclose a common output line 26 to which signals from charge detection circuits are sequentially output (fig. 1 and col. 4, lines 2-4).

Wadsworth et al. discloses a multiplexing shift register 22 as a switch (fig. 2a).

Official notice is taken that a transistor can be substituted for the switch and produce the same outcome.

Wadsworth et al. disclose a scanning circuit (multiplexing shift registers 22)

adapted to control the transfer transistors to sequentially output the signals from the charge detection circuits to the common output line (fig. 1 and col. 4, lines 2-4).

*This is your
evidence
you still
need
the obvious
statement
and
motivation*

Therefore, it would have been obvious...

7. Regarding claim 2, Wadsworth et al. disclose a signal processing circuit (CDS circuit 20) inserted between the transfer transistor (switch 22) and the charge detection circuit (diode 16 and CTIA 18) (figures 1 and 2a and col. 3, line 59-66).
8. Regarding claim 3, correlated double sampling circuits remove noise.
9. Regarding claim 7, Wadsworth et al. disclose the charge detection circuit having a control circuit (transistor 54) adapted to supply power when an input unit of the charge detection circuit is reset and when the charges from the CCD are converted into a voltage and output (fig. 7 and col. 6, lines 35-47).
10. Regarding claim 9, it is well known that CCDs are used in imaging devices, therefore official notice is taken that a camera for use as described by inventor includes a lens and a signal processing circuit adapted to process a signal from solid-state image pickup element.
11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wadsworth et al. (US #5,449,908) as applied to claim 1 above, and further in view of Tamayama (US #6,618,089).

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Regarding claim 4, Wadsworth et al. do not disclose details of their correlated double sampling circuit 20.

However, Tamayama discloses a CDS circuit 16 that includes a clamp that sample-holds the image signal (col. 5, lines 57-60).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the CDS clamp circuit of Tamayama with the invention of Wadsworth et al. for the benefit of using the sample-hold capability giving more time for the image signal to be read from the CCD.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wadsworth et al. (US #5,449,908) as applied to claim 1 above, and further in view of Miyake (US #5,767,904).

Regarding claim 5, Wadsworth et al. do not disclose sweeping unnecessary charges from photoelectric conversion units.

However, Miyake discloses a CCD control circuit 48 giving a charge sweep (clear) signal to the CCD (col. 15, lines 37-40).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the sweep method of Miyake with the CCD system of Wadsworth for the benefit of creating means for resetting the CCD before exposure.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wadsworth et al. (US #5,449,908) as applied to claim 1 above, and further in view of Woolaway (US #5,925,883).

Regarding claim 6, Wadsworth et al. disclose the charge detection circuits (fig. 7) being provided in common to the plurality of CCDs 14 (fig. 1 and col. 3, lines 59-62), but does not disclose transistors connecting the circuits to the CCDs.

However, Woolaway does disclose transistors (not numbered but activated by signal " ϕ_{tr} ") connecting the CCDs to the charge detection circuit (Readout and Scene Motion Compensation (RSMC) circuit 11) (fig. 3 and col. 4).

It would have been obvious to one of ordinary skill in the art at the time of invention to use a transistor such as the one in Woolaway to connect the CCD to charge detection circuit for the benefit of controlling the timing of signals from the CCD to the charge detection circuit.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wadsworth et al. (US #5,449,908) as applied to claim 1 above, and further in view of Nam (US #5,477,070).

Regarding claim 8, Wadsworth et al. do not disclose the CCD and charge detection circuit being separated by a well.

However, Nam discloses the charge diffusion region 18 and the end of the CCD (marked by clock pulse $\Phi 1$) being separated by an n-well (fig. 3 and col. 2, lines 15-21).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the n-well separation of Nam in the CCD of Wadsworth et al. for the benefit of reducing pulse noise produced by the signal processing circuit.

15. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wadsworth et al. (US #5,449,908) in view of Noguchi et al. (US #6,504,574).

16. Regarding claim 10, Wadsworth et al. disclose image pickup element formed on two substrates (10 and 12 in fig. 1) (col. 3, lines 49-58), but the substrates are on a single semiconductor chip (10 and 12 in fig 2a) (col. 4, lines 25-30).

Wadsworth et al. disclose photoelectric conversion units (CCD 14). The CCD units are shown as a plurality of vertical columns (fig. 1) meaning the photoelectric conversion units are arranged two-dimensionally.

Since Wadsworth et al. disclose a plurality of CCDs (columns 14 in fig. 1) adapted to transfer charges generated by said photoelectric conversion units arranged two-dimensionally, official notice is taken that the column of CCDs are connected to a vertical line of photoelectric conversion units.

Wadsworth et al. disclose a plurality of charge detection circuits (fig. 7) adapted to detect the charges from said plurality of CCDs and supplying corresponding signal levels, each of said plurality of charge detection circuits being arranged correspondingly to each CCD. (fig. 1 and col. 3, lines 49-62).

However, Wadsworth et al. do not disclose a plurality of A/D converters connected to CCD columns.

Noguchi et al. disclose a CCD image sensor 10 with A/D converters 14 each connected to a CCD column 12 (fig. 1 and col. 3, lines 22-37).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the multiple A/D converters of Noguchi et al. in the CCD of Wadsworth et al. for the benefit of enabling faster scan speeds.

17. Regarding claim 12, see claim 9.

18. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wadsworth et al. (US #5,449,908) and Noguchi et al. (US #6,504,574) as applied to claim 10 above, and further in view of Sugiki (US #5,990,948).

Regarding claim 11, neither Wadsworth et al. nor Noguchi et al. disclose an A/D conversion of sequential-comparison type.

Sugiki et al. disclose a noise canceling circuit for pixel signals.

Sugiki et al. disclose A/D converter 406 is a sequential comparison type (col. 9, lines 7-12).

It would have been obvious to one of ordinary skill in the art at the time of invention to use a sequential comparison type A/D converter for the benefit of having a converter that is of mid-range speed that is closer to the scanning time period.

19. Regarding claim 13, see claim 8.

Conclusion


20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy R. Elder whose telephone number is (703) 305-4693. The examiner can normally be reached on M-F 800-430.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

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Should you have questions on access to the Private PAIR system, contact the
Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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